Tracking immune cells in vivo using magnetic resonance imaging.

Journal: Nat Rev Immunol

Publication Year: 2013

Authors: Eric T Ahrens, Jeff W M Bulte

PubMed link: 24013185

Funding Grants: Molecular Imaging for Stem Cell Science and Clinical Application

Public Summary:
The increasing complexity of in vivo imaging technologies, coupled with the development of cell therapies, has fuelled a revolution in immune cell tracking in vivo. Powerful magnetic resonance imaging (MRI) methods are now being developed that use iron oxide- and (1)(9)F-based probes. These MRI technologies can be used for image-guided immune cell delivery and for the visualization of immune cell homing and engraftment, inflammation, cell physiology and gene expression. MRI-based cell tracking is now also being applied to evaluate therapeutics that modulate endogenous immune cell recruitment and to monitor emerging cellular immunotherapies. These recent uses show that MRI has the potential to be developed in many applications to follow the fate of immune cells in vivo.

Scientific Abstract:
The increasing complexity of in vivo imaging technologies, coupled with the development of cell therapies, has fuelled a revolution in immune cell tracking in vivo. Powerful magnetic resonance imaging (MRI) methods are now being developed that use iron oxide- and (1)(9)F-based probes. These MRI technologies can be used for image-guided immune cell delivery and for the visualization of immune cell homing and engraftment, inflammation, cell physiology and gene expression. MRI-based cell tracking is now also being applied to evaluate therapeutics that modulate endogenous immune cell recruitment and to monitor emerging cellular immunotherapies. These recent uses show that MRI has the potential to be developed in many applications to follow the fate of immune cells in vivo.